

Claims:

1. Method of coloring porous material, which comprises contacting the material being colored, with

a) a capped diazonium compound of formula



wherein

$A^+$  is a cationic radical of an organic compound,

B is a radical of an unsubstituted or substituted, aliphatic or aromatic amine,

An is an anion,

and

b) optionally a coupling component.

2. Method according to claim 1, which comprises contacting the material being colored, with

a) a capped diazonium compound of formula (1)

wherein

$A^+$  is a cationic radical of unsubstituted phenyl; naphthyl; thiophenyl; 1,3-thiazolyl;

1,2-thiazolyl; 1,3-benzothiazolyl; 2,3-benzothiazolyl; imidazolyl; 1,3,4-thiadiazolyl;

1,3,5-thiadiazolyl; 1,3,4-triazolyl; pyrazolyl; benzimidazolyl; benzopyrazolyl; pyridinyl;

quinolinyl; pyrimidinyl; isoxazolyl; aminodiphenyl; aminodiphenylether and azobenzenyl or

$A^+$  is cationic radical of a phenyl, naphthyl, thiophenyl, 1,3-thiazolyl, 1,2-thiazolyl,

1,3-benzothiazolyl, 2,3-benzothiazolyl, imidazolyl, 1,3,4-thiadiazolyl, 1,3,5-thiadiazolyl,

1,3,4-triazolyl, pyrazolyl, benzimidazolyl, benzopyrazolyl, pyridinyl, quinolinyl, pyrimidinyl and

isoxazolyl, aminodiphenyl, aminodiphenylether and azobenzenyl, each of which is mono- or

poly-substituted by  $C_1$ - $C_4$ alkyl,  $C_1$ - $C_4$ alkoxy,  $C_1$ - $C_4$ alkylthio, quaternised ammonium radicals,

halogen, e.g. fluorine, bromine or chlorine, nitro, trifluoromethyl, CN, SCN,  $C_1$ - $C_4$ alkylsulfonyl,

phenylsulfonyl, benzylsulfonyl, di- $C_1$ - $C_4$ alkylaminosulfonyl,  $C_1$ - $C_4$ alkyl-carbonylamino,

$C_1$ - $C_4$ alkoxysulfonyl or by di-(hydroxy- $C_1$ - $C_4$ alkyl)-aminosulfonyl, or

$A^+$  is a cationic radical of an organic dye, and

B is a radical of formula  $-NR_{65}R_{66}$ , wherein  $R_{65}$  is hydrogen; or unsubstituted linear or

branched  $C_1$ - $C_6$ alkyl or linear or branched  $C_1$ - $C_6$ alkyl, which is substituted by one or more

identical or different substituent selected from the group consisting of  $OC_1$ - $C_4$ alkyl,  $COOH$ ,

$COO^-$ ,  $COOC_1$ - $C_2$ alkyl,  $SO_3H$ ,  $SO_3^-$ ,  $NH_2$ , CN, halogen and OH,  $O^-$ ; and  $R_{66}$  is unsubstituted

linear or branched  $C_1$ - $C_6$ alkyl or linear or branched  $C_1$ - $C_6$ alkyl, which is substituted by one or

more identical or different substituent selected from the group consisting of  $\text{OC}_1\text{-C}_4\text{alkyl}$ ,  $\text{COOH}$ ,  $\text{COO}^-$ ,  $\text{COOC}_1\text{-C}_2\text{alkyl}$ ,  $\text{SO}_3\text{H}$ ,  $\text{SO}_3^-$ ,  $\text{NH}_2$ ,  $\text{CN}$ , halogen and  $\text{OH}$ ,  $\text{O}^-$ ; or

B is a radical of unsubstituted aniline; or a radical of unsubstituted aminonaphthalene; the radical of aniline or aminonaphthalene, wherein the phenyl or the naphthyl ring is substituted by one or more identical or different substituent selected from the group consisting of  $\text{COOH}$ ,  $\text{COO}^-$ ,  $\text{SO}_3\text{H}$ ,  $\text{SO}_3^-$ ,  $\text{CN}$ , halogen,  $\text{SO}_2\text{C}_1\text{-C}_2\text{alkyl}$ , unsubstituted linear or branched  $\text{C}_1\text{-C}_4\text{alkyl}$ , linear or branched  $\text{C}_1\text{-C}_4\text{alkyl}$ , substituted by  $\text{OH}$ ,  $\text{O}^-$ ,  $\text{COOH}$ ,  $\text{COO}^-$ ,  $\text{COC}_1\text{-C}_2\text{alkyl}$  or  $\text{SO}_2\text{-N(C}_1\text{-C}_4\text{alkyl)-(CH}_2\text{)}_{1-4}\text{SO}_3\text{H}$  and wherein the amino radical is substituted by hydrogen, unsubstituted linear or branched  $\text{C}_1\text{-C}_4\text{alkyl}$  or linear or branched  $\text{C}_1\text{-C}_4\text{alkyl}$ , substituted by  $\text{OH}$ ,  $\text{O}^-$ , or  $\text{COOH}$ ,  $\text{COO}^-$ ;

An is an anion,

and

b) a coupling component.

3. Method according to any of the precedings claims, wherein  $\text{A}^+$  is a cationic radical of unsubstituted phenyl; naphthyl; thiophenyl; 1,3-thiazolyl; 1,2-thiazolyl; 1,3-benzothiazolyl; 2,3-benzothiazolyl; imidazolyl; 1,3,4-thiadiazolyl; 1,3,5-thiadiazolyl; 1,3,4-triazolyl; pyrazolyl; benzimidazolyl; benzopyrazolyl; pyridinyl; quinolinyl; pyrimidinyl; isoxazolyl; aminodiphenyl; aminodiphenylether and azobenzenyl or

$\text{A}^+$  is cationic radical of a phenyl, naphthyl, thiophenyl, 1,3-thiazolyl, 1,2-thiazolyl, 1,3-benzothiazolyl, 2,3-benzothiazolyl, imidazolyl, 1,3,4-thiadiazolyl, 1,3,5-thiadiazolyl, 1,3,4-triazolyl, pyrazolyl, benzimidazolyl, benzopyrazolyl, pyridinyl, quinolinyl, pyrimidinyl and isoxazolyl, aminodiphenyl, aminodiphenylether and azobenzenyl, each of which is mono- or poly-substituted by  $\text{C}_1\text{-C}_4\text{alkyl}$ ,  $\text{C}_1\text{-C}_4\text{alkoxy}$ ,  $\text{C}_1\text{-C}_4\text{alkylthio}$ , halogen, e.g. fluorine, bromine or chlorine, nitro, trifluoromethyl,  $\text{CN}$ ,  $\text{SCN}$ ,  $\text{C}_1\text{-C}_4\text{alkylsulfonyl}$ , phenylsulfonyl, benzylsulfonyl, di- $\text{C}_1\text{-C}_4\text{alkylaminosulfonyl}$ ,  $\text{C}_1\text{-C}_4\text{alkyl-carbonylamino}$ ,  $\text{C}_1\text{-C}_4\text{alkoxysulfonyl}$  or by di-(hydroxy- $\text{C}_1\text{-C}_4\text{alkyl}$ )-aminosulfonyl, or

$\text{A}^+$  is a cationic radical residue of an organic dye selected from anthraquinon dye, acridine dye, azo dye, azomethine dye, hydrazomethine, benzodifuranone dye, coumarin dye, diketopyrrolopyrrole dye, dioxazine dye, diphenylmethane dye, formazan dye, indigoid dye, indophenol, naphthalimide dye, naphthoquinone dye, nitroaryl dye, merocyanine dye, methine dye, oxazine dye, perinone dye, perylene dye, pyrenequinone dye, phthalocyanine dye, phenazine dye, quinonimine dye, quinacridone dye, quinophtalone dye, styryl dye, triphenylmethane dye, xanthene dye, thiazine dye and thioxanthene dye, and

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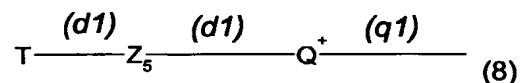
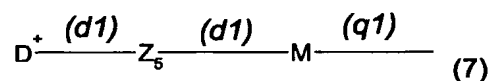
B is a radical of formula  $-NR_{65}R_{66}$ , wherein  $R_{65}$  is hydrogen; or unsubstituted linear or branched  $C_1$ - $C_6$ alkyl or linear or branched  $C_1$ - $C_6$ alkyl, which is substituted by one or more identical or different substituent selected from the group consisting of  $OC_1$ - $C_4$ alkyl,  $COOH$ ,  $COO^-$ ,  $COOC_1$ - $C_2$ alkyl,  $SO_3H$ ,  $SO_3^-$ ,  $NH_2$ ,  $CN$ , halogen and  $OH$ ,  $O^-$  and  $R_{66}$  is unsubstituted linear or branched  $C_1$ - $C_6$ alkyl or linear or branched  $C_1$ - $C_6$ alkyl, which is substituted by one or more identical or different substituent selected from the group consisting of  $OC_1$ - $C_4$ alkyl,  $COOH$ ,  $COO^-$ ,  $COOC_1$ - $C_2$ alkyl,  $SO_3H$ ,  $SO_3^-$ ,  $NH_2$ ,  $CN$ , halogen,  $OH$  and  $O^-$ .

4. Method according to any of the precedings claims, wherein  $A^+$  is a cationic radical of an organic dye selected from azo dye, azomethin dye, hydrazomethin dye, merocyanine dye, methin dye and styryl dye.

5. A method according to any of the precedings claims, wherein there is used as a coupling component an unsubstituted or substituted acylacetarylamine, phenol, naphthol, pyridine, quinolone, pyrazole, indole, diphenylamine, aniline, aminopyridine, pyrimidone, naphthylamine, aminothiazole, thiophene or hydroxypyridine.

6. A method according to any of the precedings claims, wherein a coupling component is used, which is mono- or poly-substituted by amino, alkylamino, dialkylamino, halogen, alkyl, alkoxy, phenyl, naphthyl or aryloxy.

7. Method according to any of the precedings claims, wherein  $A^+$  is a cationic radical of a dye of formulae (7) and (8)



wherein

$Z_5$  is a biradical selected from:

$-N=N-$ ,  $-CR_6=N-$ ,  $-N=CR_7-$ ,  $-NR_8-N=CR_9-$ ,  $-R_{10}C=N-NR_{11}-$ ,  $-CR_6=CR_6-$ ,

wherein

$R_6$ ,  $R_7$ ,  $R_8$ ,  $R_9$ ,  $R_{10}$  and  $R_{11}$  are each independently of the other hydrogen, or unsubstituted or substituted  $C_1$ - $C_{14}$ alkyl, allyl,  $-C_5$ - $C_{10}$ aryl,  $-C_1$ - $C_{10}$ alkylen( $C_5$ - $C_{10}$ aryl),

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-C<sub>5</sub>-C<sub>10</sub>arylen-(C<sub>1</sub>-C<sub>10</sub>alkyl), and

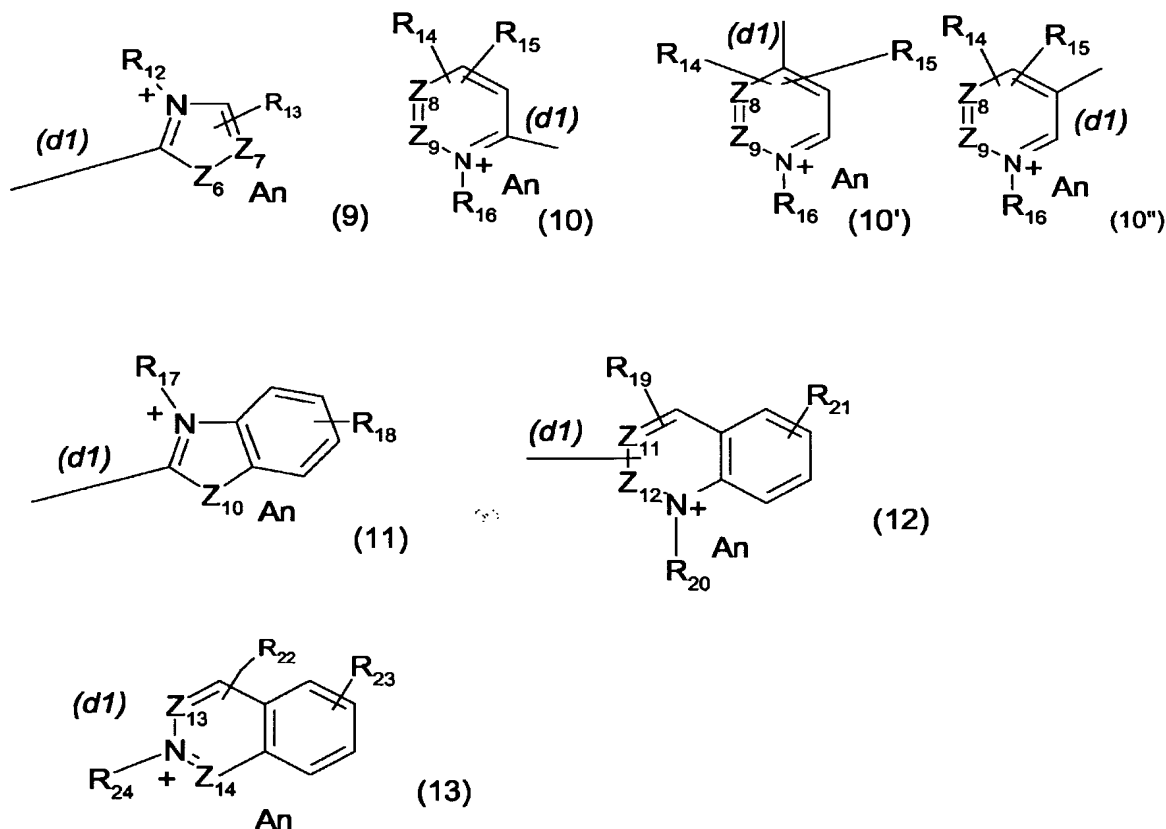
D<sup>+</sup> is a radical of a cationic, aromatic, substituted or unsubstituted heterocyclic compound,

M is a biradical of an aromatic substituted or unsubstituted compound,

T is a radical of an aromatic substituted or unsubstituted compound, and

Q<sup>+</sup> is a biradical of an aromatic, substituted or unsubstituted heterocyclic compound.

8. Method according to claim 7, wherein D<sup>+</sup> is a radical of a cationic aromatic substituted or unsubstituted heterocyclic compound of formulae (9), (10), (10'), (10''), (11), (12) or (13)

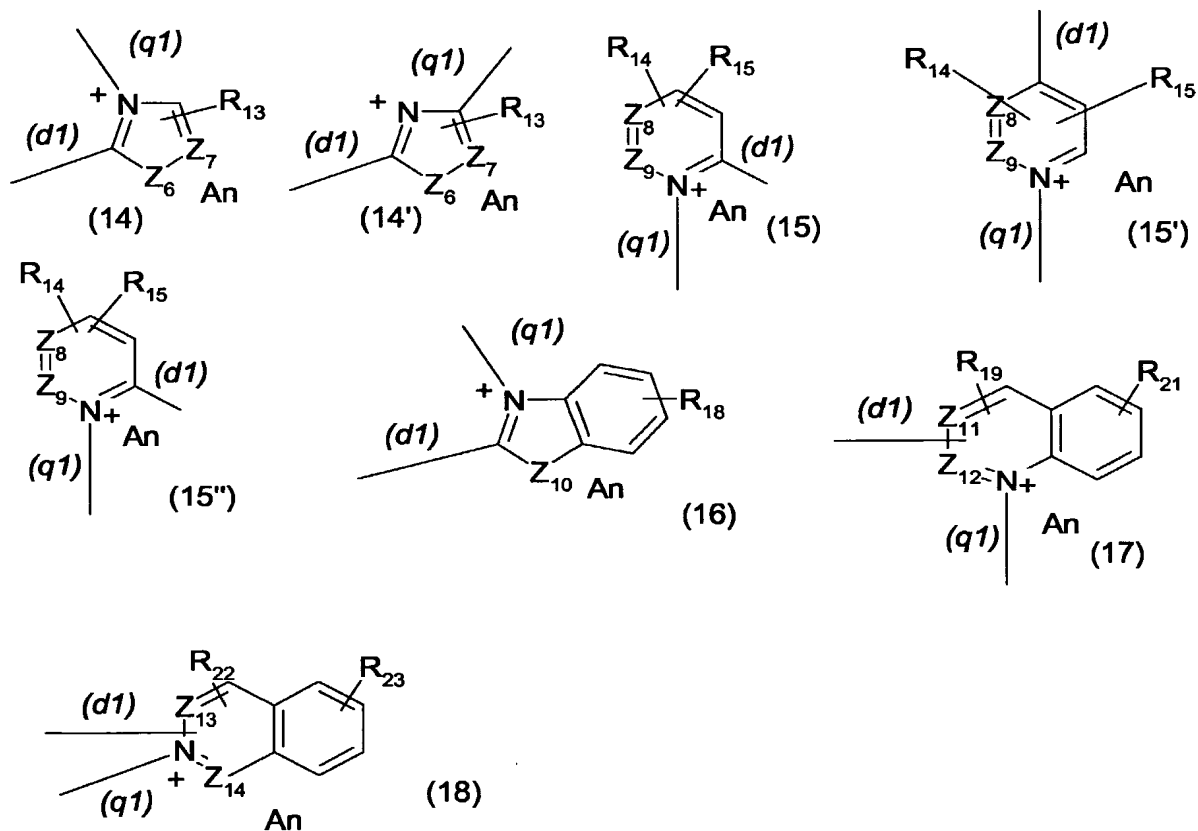


wherein

(d1) is a bond of formula (7) as defined in claim 7;

and

Q<sup>+</sup> is a biradical of a cationic aromatic substituted or unsubstituted heterocyclic compound of formulae (14), (14'), (15), (15'), (15''), (16), (17) or (18)

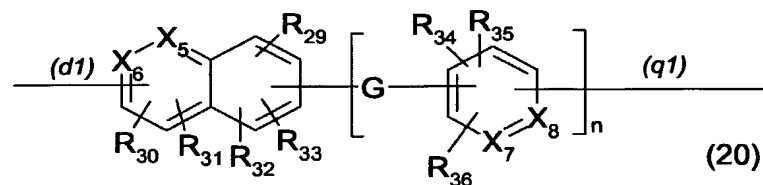
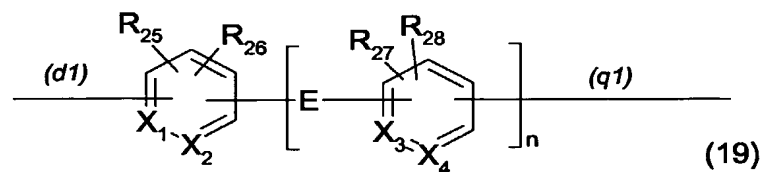


wherein

(d1) and (q1) are a bond to Z<sub>5</sub> of formula (8) as defined in claim 7,

and

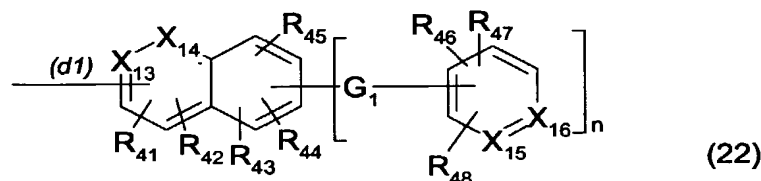
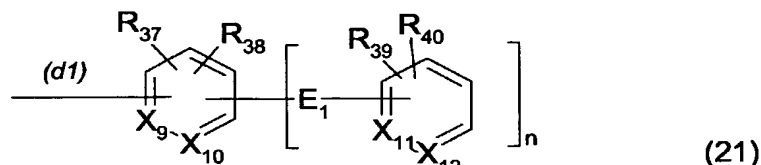
M is a biradical of formulae (19) or (20),



wherein

(d1) and (q1) are a bond of formula (7) as defined in claim 7, and

T is a radical of compounds of formulae (21) or (22),



wherein

(d1) is a bond of formula (8) as defined in claim 7, and

wherein

X<sub>1</sub>, X<sub>2</sub>, X<sub>3</sub>, X<sub>4</sub>, X<sub>5</sub>, X<sub>6</sub>, X<sub>7</sub>, X<sub>8</sub>, X<sub>9</sub>, X<sub>10</sub>, X<sub>11</sub>, X<sub>12</sub>, X<sub>13</sub>, X<sub>14</sub>, X<sub>15</sub> and X<sub>16</sub> are independently from each other N or a radical of CR<sub>49</sub>,

Z<sub>6</sub> is O or S or a radical of NR<sub>50</sub>,

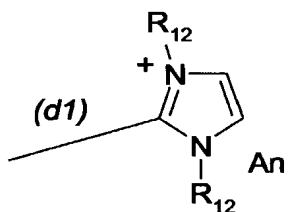
Z<sub>7</sub>, Z<sub>8</sub>, Z<sub>9</sub>, Z<sub>10</sub>, Z<sub>11</sub>, Z<sub>12</sub>, Z<sub>13</sub> and Z<sub>14</sub> are independently from each other N or a radical of CR<sub>51</sub>;

E, E<sub>1</sub>, G and G<sub>1</sub> are independently from each other -O-, -S-, -(SO<sub>2</sub>)-, -C<sub>1</sub>-C<sub>10</sub>alkylen, or -(NR<sub>52</sub>)-;

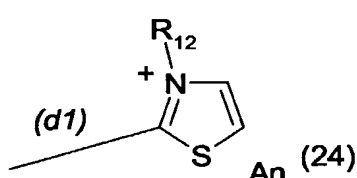
R<sub>13</sub>, R<sub>14</sub>, R<sub>15</sub>, R<sub>18</sub>, R<sub>19</sub>, R<sub>21</sub>, R<sub>22</sub>, R<sub>23</sub>, R<sub>25</sub>, R<sub>26</sub>, R<sub>27</sub>, R<sub>28</sub>, R<sub>29</sub>, R<sub>30</sub>, R<sub>31</sub>, R<sub>32</sub>, R<sub>33</sub>, R<sub>34</sub>, R<sub>35</sub>, R<sub>36</sub>, R<sub>37</sub>, R<sub>38</sub>, R<sub>39</sub>, R<sub>40</sub>, R<sub>41</sub>, R<sub>42</sub>, R<sub>43</sub>, R<sub>44</sub>, R<sub>45</sub>, R<sub>46</sub>, R<sub>47</sub>, R<sub>48</sub>, R<sub>49</sub> and R<sub>51</sub> are independently from each other hydrogen, halogen, C<sub>1</sub>-C<sub>14</sub>alkyl, which is saturated or unsaturated, linear or branched, substituted or unsubstituted, or interrupted or uninterrupted with heteroatoms; a radical of phenyl, which substituted or unsubstituted; a radical of carboxylic acid; a radical of hydroxy, nitril, C<sub>1</sub>-C<sub>16</sub>alkoxy, (poly)-hydroxy-C<sub>2</sub>-C<sub>4</sub>-alkoxy, carboxylic acid, sulfonic acid; halogen, sulfonylamino, SR<sub>60</sub>, NHR<sub>53</sub> or NR<sub>54</sub>R<sub>55</sub>, OR<sub>61</sub>, SO<sub>2</sub>, COOR<sub>62</sub>, NR<sub>56</sub>COR<sub>58</sub>, CONR<sub>57</sub>; and R<sub>12</sub>, R<sub>16</sub>, R<sub>17</sub>, R<sub>20</sub>, R<sub>24</sub>, R<sub>50</sub>, R<sub>52</sub>, R<sub>53</sub>, R<sub>54</sub>, R<sub>55</sub>, R<sub>56</sub>, R<sub>57</sub>, R<sub>58</sub>, R<sub>60</sub>, R<sub>61</sub> and R<sub>62</sub> are each independently of the other hydrogen, unsubstituted or substituted C<sub>1</sub>-C<sub>14</sub>alkyl, allyl, -C<sub>5</sub>-C<sub>10</sub>arylen-(C<sub>1</sub>-C<sub>10</sub>alkyl), -C<sub>1</sub>-C<sub>10</sub>alkylen(C<sub>5</sub>-C<sub>10</sub>aryl), C<sub>5</sub>-C<sub>10</sub>aryl, and

An is an anion.

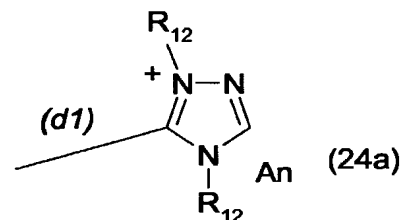
9. Method according to any of precedings claims, wherein  $D^+$  is a radical of a cationic aromatic substituted or unsubstituted heterocyclic compound of formulae (23), (24), (24a), (25), (26), (26a) or (27)



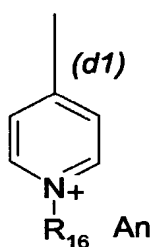
(23)



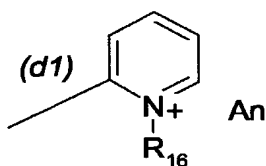
(24)



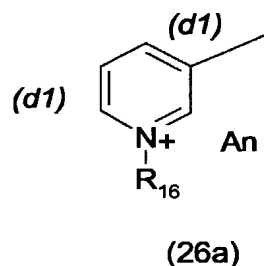
(24a)



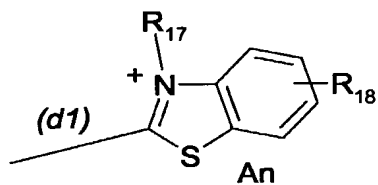
(25)



(26)



(26a)



(27)

wherein

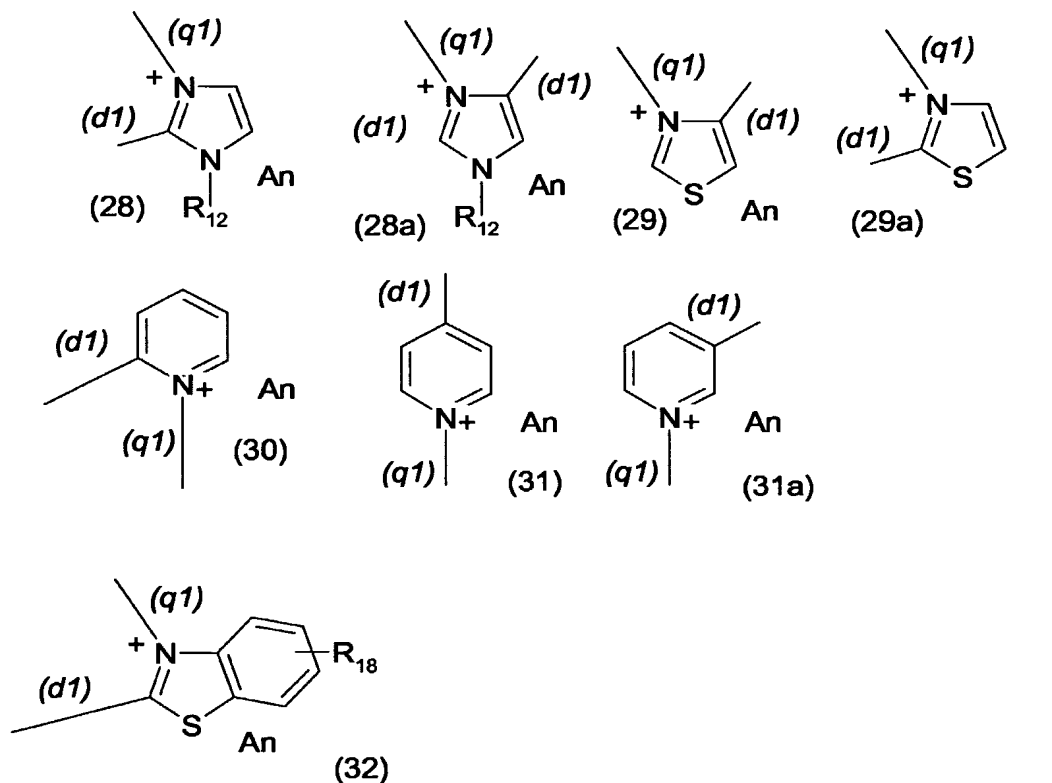
(d1) and (q1) are a bond of formula (7) as defined in claim 7, and

An, R<sub>12</sub>, R<sub>16</sub>, R<sub>17</sub> and R<sub>18</sub> have the same meaning as given in claim 8,

and

$Q^+$  is a biradical of a cationic aromatic substituted or unsubstituted heterocyclic compound of formulae (28), (28a), (29), (29a), (30), (31), (31a) or (32)

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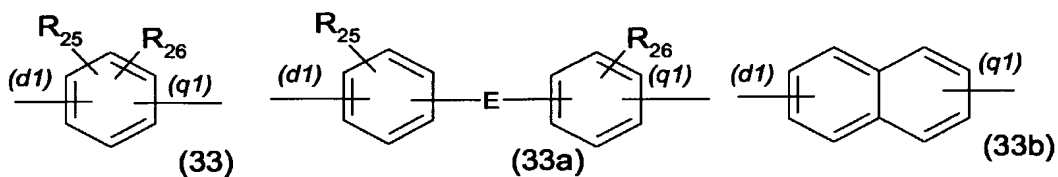
wherein

(d1) and (q1) are bond of formula (8) as defined in claim 7, and

An, R<sub>12</sub> and R<sub>18</sub> have the same meaning as given in claim 8,

and

M is a biradical of formulae (33), (33a) or (33b),



wherein

(d1) and (q1) are bond of formula (7) as defined in claim 7, and

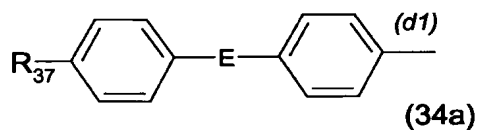
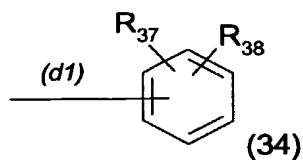
E, R<sub>25</sub> and R<sub>26</sub> have the same meaning as given in claim 8;

and

T is a radical of formulae (34) or (34a),



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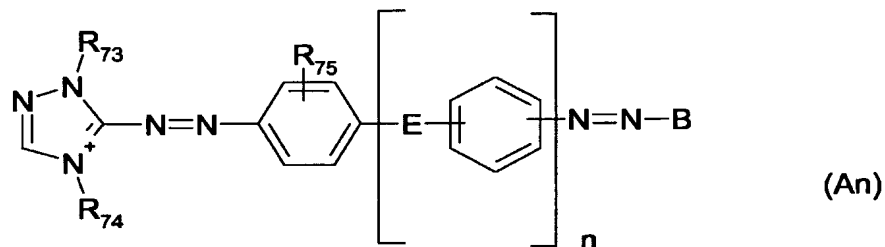
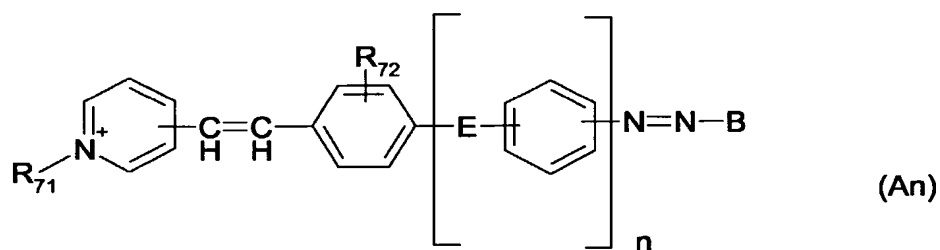
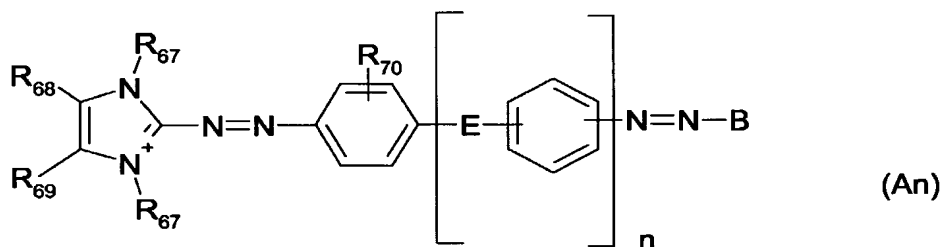


wherein

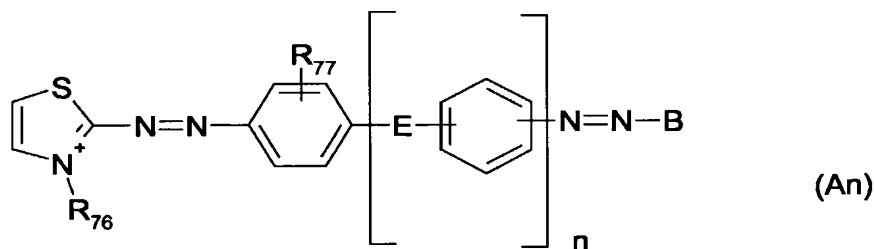
$R_{37}$ ,  $R_{38}$  and E has the same definition as given in claim 8, and  
 (d1) is a bond of compound of formula (8) as defined in claim 7.

10. Method according to any of the precedings claims, which comprises contacting the material being colored, with

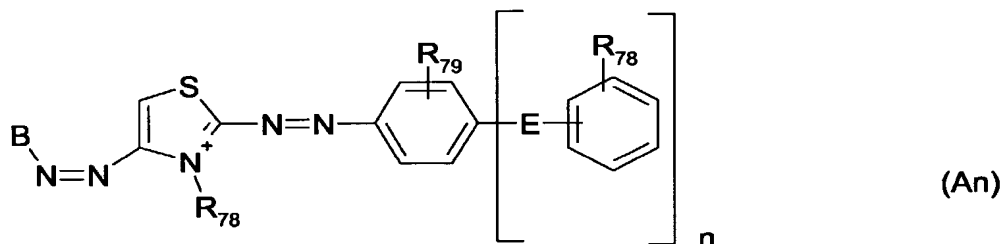
a) at least a single capped diazonium compound selected from the group of compounds of the following formulae



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and



wherein

E is  $-O-$ ,  $-S-$ ,  $-(SO_2)-$ ,  $CR_{80}$  or a radical of  $-(NR_{81})-$ ;

$R_{70}$ ,  $R_{72}$ ,  $R_{75}$ ,  $R_{77}$ ,  $R_{78}$ ,  $R_{79}$ ,  $R_{80}$  and  $R_{81}$  are independently from each other hydrogen,  $C_1$ - $C_{16}$ alkyl, which is saturated or unsaturated, linear or branched, substituted or unsubstituted, or interrupted or uninterrupted with heteroatoms, such as, by hydroxy, nitrile, amino,  $C_1$ - $C_2$  alkoxy, (poly)-hydroxy- $C_2$ - $C_4$ -alkoxy, di- $C_1$ - $C_2$  alkylamino, carboxylic acid, sulfonic acid; a radical of phenyl, which substituted or unsubstituted; a radical of carboxylic acid; a radical of sulfonylamino, S, NH or  $N(C_1$ - $C_4$ alkyl), O, halogen,  $SO_2$ , COO, OCO, NHCO, CONH,  $CON(C_1$ - $C_4$ alkyl) or  $N(C_1$ - $C_4$ alkyl)CO; or are independently from each other an aliphatic or aromatic, substituted;

$R_{68}$  with  $R_{69}$  have the same meaning as  $R_{70}$ ,  $R_{72}$ ,  $R_{75}$ ,  $R_{77}$ ,  $R_{78}$ ,  $R_{79}$ ,  $R_{80}$  and  $R_{81}$  as given above, or

$R_{68}$  with  $R_{69}$  can build up an aromatic carbon cycle;

$R_{67}$ ,  $R_{71}$ ,  $R_{73}$ ,  $R_{74}$ ,  $R_{76}$  and  $R_{78}$  are unsubstituted or substituted  $C_1$ - $C_{14}$ alkyl, allyl,  $-C_5$ - $C_{10}$ arylen- $(C_1$ - $C_{10}$ alkyl),  $-C_1$ - $C_{10}$ alkylen- $(C_5$ - $C_{10}$ aryl),  $C_5$ - $C_{10}$ aryl;

B, An and n have the same meaning as given in claim 2;

and

b) a coupling component.

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11. Compounds of formula (1)

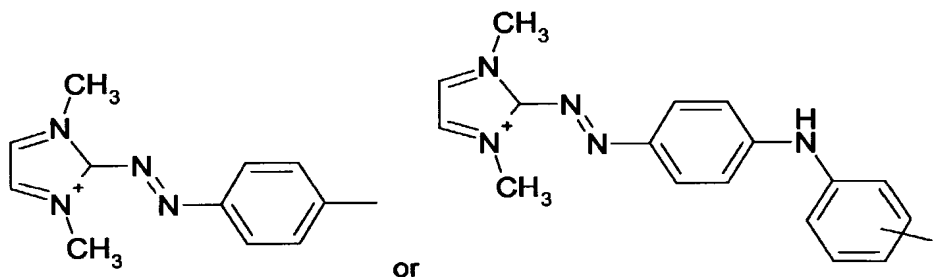


wherein

A<sup>+</sup> is a cationic radical of an organic compound,

B is a radical of an unsubstituted or substituted, aliphatic or aromatic amine,

An is an anion, with the proviso that A<sup>+</sup> is not a radical of formula



12. A composition comprising at least a single capped diazonium compound of formula (1) as defined above in claim 1 and a coupling component.

13. A composition according to claim 12 comprising in addition at least a single direct dye, and/or at least a single oxidative dye and/or an oxidative agent.

14. Composition according to any one of claims 12 or 13 in form of a shampoo, conditioner, gel or emulsion.

15. A method according to any one of claims 1 to 10 for dyeing or tinting human hair.